



United States  
Department Of  
Agriculture

Forest  
Service

Shasta-Trinity  
National Forests

Lat 41, 48730 Lon -122.21934

Reply To: 3420

Date: June 11, 1992

Subject: Biological Evaluation of Dwarf Mistletoe on North Side  
of Mt. Shasta, Mt. Shasta RD (FPM Report No. N92-4)

To: Forest Supervisor, Shasta-Trinity NF

On May 4, 1992 Dave Schultz, Entomologist, Linda Haugen, Plant Pathologist, and I visited with Dave Trevisan and Matt Cheula of the Mt. Shasta Ranger District. The purpose of our visit was to examine an area on the north side of Mt. Shasta that is infested with dwarf mistletoe in ponderosa pine. The District is considering the need for treatment of the area to improve tree conditions and to promote forest health. We examined three different situations that have different objectives, concerns, and needs.

The first area is a mixed stand of ponderosa pine and white fir with various size classes of both species. Shrub species include manzanita, bitterbrush, and snowbrush. The area proposed for management activities totals about 200 acres and is made up of small units of 10 acres or more on the north side of the Mt. Shasta Wilderness (T. 42 N., R. 3 W., section 17). Western dwarf mistletoe (Arceuthobium campylopodum) varies from light to heavy in individual pines in some of the units. The District would like to regenerate these units to improve their health and eventually provide a 3-layered stand structure. The proposed prescription is to leave the healthy advanced regeneration and uninfected overstory ponderosa pines. Some units may require underplanting. Small openings would be created in some units and would be planted with pine. White fir in these openings would be retained. Some overstory pines that are infected would be left for wildlife attributes and snag recruitment. These might subsequently be killed to protect surrounding regeneration from infection by dwarf mistletoe. The areas examined tend to be on flatter ground at the base of the mountain, but dwarf mistletoe infections continue in pines upslope. To protect pine regeneration in units a 50 foot slope-adjusted buffer that would remove or kill infected overstory pines should be provided. Removal of all pines from this buffer is not necessary, only those which might be sources of infection.

This is a viable prescription for the area, but will require considerable skill and effort in implementing. Dwarf mistletoe will not be eradicated. Removing the infected overstory trees will reduce the spread to the understory pine and improve their ability to grow and become replacement trees. When infected overstory pines are retained, it must be recognized that they will provide a continuous source of inoculum to surrounding pine regeneration unless they are killed or are screened by white fir from the regeneration. Some infected trees in the understory may need to be retained, but improving their height growth by removing the overstory and adjusting the stocking to appropriate levels for the site will reduce their infection level. Regeneration of pines in this situation should not be promoted. A continuous multiple layer stand structure may not be





feasible in all units. A single story or 2-story structure with pine as the overstory and white fir in the understory may be justified if cover must be retained, but the future effect of dwarf mistletoe is to be reduced.

The second situation focused on ponderosa pine plantations that have dwarf mistletoe infected overstory trees in and around them (T. 42 N., R. 3 W., section 9). These tend to be non-merchantable trees left from the prior harvest. They occur as individuals or in clumps and are providing a ready source of mistletoe inoculum for the understory plantation. Some infection of the plantation trees has already occurred. Retention of these overstory trees will reduce plantation growth because of competition for moisture and light and from continual mistletoe infection. Their removal as sources of infection, followed by cleanup of the surrounding regeneration would benefit long-term stand health and vigor. These trees do not have to be harvested, but can be killed and left standing. This may be done by traditional methods or we can provide assistance in utilizing commercially produced western pine beetle pheromone to attract bark beetles and more "naturally" and cost effectively kill the trees. If pheromones are used, any ponderosa pines greater than 4 inches in diameter within about 20 feet of a treated tree may also be successfully attacked. Care must be taken in tree selection for this treatment if there is no desire to kill nearby trees. Where pockets of infected overstory exist, more benefits may be obtained by retaining them for future snags and diversity and foregoing fiber productivity in the plantation. Areas between these residual islands of infected trees and the plantation should be cleared of pine for 30 to 50 feet to reduce spread of dwarf mistletoe into the plantation.

The third situation we examined was in the vicinity of the plantations. This was a small stand of larger ponderosa pines that had not been treated during the previous harvest, but were surrounded by pine plantations. Pines had not been underplanted. Many of these trees were infected by dwarf mistletoe. Because of the limited amount of larger trees with "old-growth" characteristics in the area, it was thought there might be a desire to maintain this stand. There were two concerns: protecting the surrounding plantations from infection and improving the health of the large trees and increasing their longevity. Protecting the surrounding plantations can be accomplished by creating a 30 to 50 foot wide host free buffer. This may also function as a fuel break around the stand to reduce its susceptibility to future fires. The stand is bordered on one side by a road with a plantation on the opposite side of the road. The road and part of the plantation could easily be used as a buffer on this side. Increasing the longevity of the larger trees may also be accomplished by reducing the amount of dwarf mistletoe, especially witches' brooms, in individual trees. It is known that witches' brooms have the greatest impact on tree vigor and their removal has increased a tree's resistance to bark beetles and mortality. Dwarf mistletoe would not be eradicated from the stand or from individual trees. Rather the witches' brooms which tend to be found principally in the lower crown would be removed by pruning. Long-term management of this stand might include periodic prescribed underburning to keep stocking levels down and decrease moisture competition.

Forest Pest Management suppression funds may be available for some of the above activities (see FSH 3409.11 chapter 62.11 and FSM 3431). When appropriate, these funds should be requested to supplement normal activity costs when dwarf



mistletoe suppression activities will increase these costs. Practices which can be funded include dwarf mistletoe surveys to gather mistletoe distribution and severity data, removal of infected residual trees when not a part of normal reforestation or sale cleanup, sanitation solely for dwarf mistletoe suppression, stand destruction when it cannot be economically harvested, and pruning or removal of infected trees or tree parts. This last practice is specified for recreation areas and agreement from the Regional Office will be necessary if the District desires to treat the old-growth pines discussed above. Proposals must be supported by a biological evaluation by FPM (this document), a FPM Project Proposal (FS-3400-2), and be supported by proper NEPA analysis, including an economic analysis sufficient to reflect the benefits and costs of all feasible alternate treatments. Treatments and proposals for funding should be identified in the program development and budgeting process. Suppression needs should be identified to State and Private Forestry as soon as possible. Current fiscal year needs should be identified by January 1 for timely submission to the WO, although funding requests for emergencies or when new opportunities occur can be made at any time. Earlier submission as part of the budget process aids in FPM planning and budgeting.

If there are any questions about this evaluation or if additional assistance is required, please contact me at (916)-246-5101.

/s/ Gregg DeNitto

GREGG DeNITTO  
Plant Pathologist  
FPM Northern CA Service Area